6thly, C repreſents the drum-wheel, which ſhould be about half the diameter of the tub, and ſo placed that one ſide may come exactly over the centre of the pit. Care muſt be taken that this wheel be made ſufficiently ſtrong to ſupport ten or twelve tons, *which indeed is not ſo much as the ordinary weight of a conſiderable water wheel:* its length may be from eight to twelve feet, but if kept ſhort it will have the more ſtrength. On one end of this drum a ſpur-wheel, D, muſt be conſtructed, that the motion may begin to multiply. For it muſt be obſerved, that as the plane will be ſometimes ſix, ſeven, eight, or more times the length of the pit, the boat will have to paſs through ſo much more ſpace than the tub; hence the movements muſt multiply in proportion. I will, in this, ſuppoſe the plane ſix times as long as the pit is deep, therefore let the ſpur-wheel on the drum be three times the diameter of the drum, which will multiply the movement three times, leaving three to be made on the other parts of the machine; the drum and ſpur-wheel being formed, a pinion may work in the ſpur *, to the ſhaft of which a pair of fans will regulate the increaſed velocity of the tub in returning. The drum being fixed, the tub is to be ſuſpended by two or more chains, and on the oppoſite ſide a weight ſomething ſuperior to the tub; the uſe of this weight, is to return the tub to the top of the pit when the water is diſcharged.

Balance chains, equal in length to the depth of the pit, *and equal in weight to the tub chains, three feet of one, for inſtance, being juſt as heavy as three feet of the other*, muſt be fixed, one end to the bottom of the tub, the other to the bottom of the weight; and thus, as the tub and weight riſe and deſcend alternately, there will ever be the ſame quantity of chain pendent, which will preſerve a balance on the works; but, without this chain, ſuppoſe the tub to be ſituated at bottom, the weight would have to raiſe not only the tub, but its chain alſo; and the tub would have a ſimilar weight to raiſe when the weight was at bottom; but now whichever is at top has thewhole of the balance chain hanging to its bottom, therefore an aſſiſtant to raiſe the oppoſite chains and prevent them from being a tax on the machine. (See the Balance Chains in the Plate of Parts).

E, a horizontal, or rather inclined wheel, being on an angle with the plane. This wheel ſhould be of ſuch a diameter, that its extremities might come exactly oppoſite the centre of the two planes, which will be about eight feet, therefore eight feet diameter; about ten inches broad on the ſole, and two flanges: to keep the chain on the wheel round the rim, ſtrong pins, or teeth, muſt be fixed, on which the links of the chain catch promiſcuouſly, to prevent them ſlipping; the beſt mode of forming this will be by ſegments of iron caſt with the flanges, and a row of holes in the centre and end of each, and acroſs the ſegment, at about one inch diſtant from each other. In faſtening the ſegments to the wood, the ſcrew-heads may be left pointed, and projecting about one inch, which will anſwer the purpoſe of catching the links; on the upper part of this wheel, ſegments of bevil gear muſt alſo be ſcrewed, of the ſame diameter as the wheels. A wheel of the ſame ſize and conſtruction, *excepting the bevil gear*, muſt be placed at the bottom of the plane, and over the lower pond of canal *this muſt be horizontal*. Round theſe wheels the leading chains perform a rotatory movement; a ſtopper being placed on the upper wheel to prevent it turning back. (See the Plate of Parts.)

F, a lying ſhaft, to convey the power from the drum to the inclined wheel. By this the remainder of the multiplied movement is performed; by a ſmall pinion working in the ſpur-gear of the drum, and a large bevil working in the bevil of the inclined wheel,

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* See Fig. I. in the Ground Plan.